

In a process and apparatus for coating the front and/or rear facets of semiconductor laser diodes with antireflection layers of minimal reflectivity, the coating material is deposited on the facets while at least one laser parameter is monitored, in-situ, for determining the coating thickness of the individual antireflection layers resulting in the minimum reflectivity of the coating and the respective coating procedure is terminated when the laser parameter indicates that such coating thickness has been reached.